

I claim:

1. A non-naturally occurring plant, comprising an ectopically expressed nucleic acid molecule encoding a plant anti-death (PAD) polypeptide or active fragment thereof, said non-naturally occurring plant characterized by increased resistance to biotic or abiotic stress.

2. The non-naturally occurring plant of claim 1, wherein said PAD polypeptide has substantially the amino acid sequence of tomato PAD-1 (SEQ ID NO:2).

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3. The non-naturally occurring plant of claim 2, wherein said PAD polypeptide has the amino acid sequence of tomato PAD-1 (SEQ ID NO:2).

4. The non-naturally occurring plant of claim 1, wherein said PAD polypeptide has the amino acid sequence of an ortholog of tomato PAD-1.

5. The non-naturally occurring plant of claim 1, which is a transgenic plant.

6. The transgenic plant of claim 5, wherein said ectopically expressed nucleic acid molecule encoding a PAD polypeptide is operatively linked to an exogenous regulatory element.

7. The transgenic plant of claim 6, said nucleic acid molecule comprising an exogenous nucleic acid molecule encoding a PAD polypeptide having the amino acid sequence of an ortholog of tomato PAD-1.

8. The transgenic plant of claim 6, wherein said exogenous regulatory element is a constitutive regulatory element.

9. The transgenic plant of claim 6, wherein said exogenous regulatory element is an inducible regulatory element.

10. The transgenic plant of claim 5, which is selected from the group consisting of a rice, corn, wheat, soybean, common fruit and ornamental flower plant.

11. The transgenic plant of claim 5, which is a grass.

12. The transgenic plant of claim 11, which is a turf grass.

13. A tissue derived from a transgenic plant, said plant comprising an ectopically expressible nucleic acid molecule encoding a PAD polypeptide and characterized by increased resistance to biotic or abiotic stress.

14. The tissue of claim 13, which is a seed.

15. The tissue of claim 13, which is a fruit.

16. A method of increasing the resistance of a plant to biotic or abiotic stress, comprising ectopically expressing in said plant a nucleic acid molecule encoding a plant anti-death (PAD) polypeptide or active fragment thereof.

17 The method of claim 16, comprising
introducing into said plant a nucleic acid molecule encoding
a PAD polypeptide or active fragment thereof, thereby
increasing the resistance of said plant to biotic or abiotic
5 stress.

18. An isolated polypeptide, comprising an amino
acid sequence encoding a plant anti-death (PAD) polypeptide
or an active fragment thereof.

19. The isolated polypeptide of claim 18, wherein
10 said PAD polypeptide has substantially the amino acid
sequence of tomato PAD-1 (SEQ ID NO: 2).

20. The isolated polypeptide of claim 19, wherein
said PAD polypeptide has the amino acid sequence of tomato
PAD-1 (SEQ ID NO: 2).

15 21. The isolated polypeptide of claim 18,
wherein said PAD polypeptide has the amino acid sequence of
an ortholog of tomato PAD-1.

22. An isolated nucleic acid molecule,
comprising a nucleic acid sequence encoding a tomato Bax
20 inhibitor-1 (BI-1) polypeptide or active fragment thereof,
provided that said nucleic acid molecule is not GenBank
accession AI771102.

23. The isolated nucleic acid molecule of claim
22, wherein said tomato BI-1 polypeptide has substantially
25 the amino acid sequence of tomato BI-1 (SEQ ID NO: 4).

24. The isolated nucleic acid molecule of claim 23, comprising a nucleic acid sequence encoding the amino acid sequence SEQ ID NO: 4.

25. The isolated nucleic acid molecule of claim 24, comprising the nucleic acid sequence SEQ ID NO: 3.

26. A vector, comprising a nucleic acid molecule encoding a tomato Bax inhibitor-1 (BI-1) polypeptide or active fragment thereof, provided that said nucleic acid molecule is not GenBank accession AI771102.

27. The vector of claim 26, which is a plant expression vector.

28. The vector of claim 26, wherein said tomato BI-1 polypeptide has substantially the amino acid sequence of tomato BI-1 (SEQ ID NO: 4).

29. A non-naturally occurring plant, comprising an ectopically expressed nucleic acid molecule encoding a tomato Bax inhibitor-1 (BI-1) polypeptide or active fragment thereof, said non-naturally occurring plant characterized by increased resistance to biotic or abiotic stress.

30. The non-naturally occurring plant of claim 29, wherein said tomato BI-1 polypeptide has substantially the amino acid sequence of tomato BI-1 (SEQ ID NO: 4).

31. The non-naturally occurring plant of claim 30, wherein said tomato BI-1 polypeptide has the amino acid sequence of tomato BI-1 (SEQ ID NO: 4).

32. The non-naturally occurring plant of
5 claim 29, which is a transgenic plant.

33. The transgenic plant of claim 32, wherein said ectopically expressed nucleic acid molecule encoding a tomato BI-1 polypeptide is operatively linked to an exogenous regulatory element.

10 34. The transgenic plant of claim 33, wherein said exogenous regulatory element is a constitutive regulatory element.

35. The transgenic plant of claim 33, wherein said exogenous regulatory element is an inducible regulatory
15 element.

36. The transgenic plant of claim 32, which is selected from the group consisting of a rice, corn, wheat, soybean, common fruit and ornamental flower plant.

20 37. The transgenic plant of claim 32, which is a grass.

38. The transgenic plant of claim 37, which is a turf grass.

39. A tissue derived from a transgenic plant,
said plant comprising an ectopically expressible nucleic
acid molecule encoding a tomato BI-1 polypeptide and
characterized by increased resistance to biotic or abiotic
5 stress.

40. The tissue of claim 39, which is a seed.

41. The tissue of claim 39, which is a fruit.

42. A method of increasing the resistance of a
plant to biotic or abiotic stress, comprising ectopically
10 expressing in said plant a nucleic acid molecule encoding a
tomato Bax inhibitor-1 (BI-1) polypeptide or active fragment
thereof.

43. The method of claim 42, comprising
introducing into said plant a nucleic acid molecule encoding
15 a tomato BI-1 polypeptide or active fragment thereof,
thereby increasing the resistance of said plant to biotic or
abiotic stress.

44. An isolated polypeptide, comprising an amino
acid sequence encoding tomato BI-1 or an active fragment
20 thereof.

45. The isolated polypeptide of claim 44, wherein
said tomato BI-1 has substantially the amino acid sequence
of tomato BI-1 (SEQ ID NO: 4).

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